Amendments to the Specification

Please replace paragraph 7 on Page 3 with the following amended paragraph:

7 The present invention is a purchasing aid logistics appliance (PAL) is stand alone device that communicates with a merchant computer providing communication between a PAL and the merchant in-store computer. Sensitive personal finance, product, price and availability information can be exchanged between the PAL and the merchant computer in a secure timely manner to specific identifiable purchasers and to the general public. The PAL will assist the purchaser in product selection and location; merchant selection and management; ~~automate~~ automated checkout; and ~~manage~~ managing financial data. In addition, the PAL interfaces with a merchants in-store system to communicate to the purchaser in the retail space. The PAL communicates using both data and voice using an unrestricted part of the spectrum. The PAL interfaces with a network outside the retail space to gather product information in preparation for future visits to the merchant store. Further, the PAL interacts securely in the retail space with the merchants automation system to assist the purchaser with product selection, location and checkout.

Please replace paragraph 28 on Page 7 with the following amended paragraph:

28 The PAL 10 is designed to facilitate procurement planning. This planning will most likely take place as the purchaser or customer uses the PAL 10 to create lists of items to procure. For example, a merchant grocer distributes a flyer to each household in a district. To create a list the purchaser (customer) first scans in the merchant's specific optical code, which contains information pertinent to the merchant, including but not limited to sale terms and conditions. For each product listed, a printed barcode or similar code is produced that can be scanned into the

PAL 10. To add a specific product to the list, the ~~purchser~~ purchaser scans the product specific optical code. The code contains a product description, unit and price. The printed media advertisement will have a master barcode or similar control code identifying the merchant, date and sale terms. The purchaser scans in the master control code for each item to be procured. Items can be added or removed using the keypad functions. In addition, items can be added from memory based upon previous purchases as well as on-line from the merchant's web site. If the purchaser is Internet enabled, an RF device (not shown) attached to the personal computer will activate the RF link via the optical scan assembly 46, acting as an Internet port, and enable up loads and down loads to the PAL 10. The merchant will receive advance information on product selections. If the purchaser is not Internet enabled or chooses not to use the Internet, then the merchant receives this information on customer ingress into the merchant store.

Please replace paragraph 32 on Page 9 with the following amended paragraph:

32 An encode process, as shown in FIG. 3, shows how a vertical barcode or similar code can encode a WEB page display and/or behavior modifying rules. The encode process uses codes and checksums for data reliability. Returning to FIG. 2, the user will point a laser scan line 66 generated by the optical scan assembly 42 at the top barcode 202 and drag the laser scan line 66 to the bottom barcode 203. When successful the purchasing aid logistic appliance 10 will beep one short high-pitched note. If not successful the purchasing aid logistic appliance 10 will beep one long low sounding beep. Checksums in the code will indicate a successful scan. Also, other types of signals representative of information can also ~~e~~ be printed by the PAL 10.

Please replace paragraph 34 on Page 10 with the following amended paragraph:

34 The vertical barcode format, for example, does not contain a specific language, for example, Java or ~~HTLM~~ HTML. Rather the vertical barcode will represent a sequence of numerical codes. Then from that, each suitable language will have a table from which a list of codes will generate a finite number of web page variations. The high-density barcode 60 identifies the table and represents codes indexed specifically for each language. The high-density barcode 60 uses the parser 104 to construct the frame software needed by a display browser 108. This is a multi step process designed to make, for example, the vertical barcode format or a similar code independent of any browser language.

Please replace paragraph 37 on Page 11 with the following amended paragraph:

37 FIG. 4 is a partial example of how to build a ~~HTLM~~ HTML decode table 105 of numerical codes indexed to coding statements. Some coding statements will require additional fields to fully populate the statement. The purpose of HTML decode table 105 is to reduce the need for information bandwidth by using numerical codes to represent entire statements. Thus by calling out codes and populating them with field data a full statement can be built conserving barcode bandwidth. FIG. 6 illustrates a minimum number of statements in the ~~HTLM~~ HTML decode table 105 to build a web page displaying, for example, "HELLO WORLD."

Please replace paragraph 39 on Page 12 with the following amended paragraph:

39 The high-density barcode 60 or any similar print code contains a numerical table index code with data. The codes are cross-referenced to tables 105,106,107,111, as shown in FIG. 3. The index points to a software instruction contained in the HTML decode table 105, which contains a series of code values 401, as illustrated in FIG. 5. These values contain significance to the parser 104. The HTML decode table 105 instructs the ~~parse~~ parser 104 how to interpret the

value. For example, code 11 indicates the start of table data. The next value is one of eight possibilities corresponding to tables 105,106,107,111.

Please replace paragraph 40 beginning on Page 12 with the following amended paragraph:

40 FIG. 6 is an example of the parsing process where the barcode 503 represents the numerical sequence 501. Embedded in numerical sequence 501 is code 11 12 05 which tells the parser 104 to select the HTML decode table 105 to interpret the remainder of the data and there are 5 code statements. Code 60 is a fictitious checksum value shown for example only. It will repeat at the barcode end. Code 22 indicates the start of table indices. Code 00 is the first entry in the HTML decode table 105. This first entry has no required fields. Index 04 is the first code statement to require a field. Code 31 tells the parser 104 the next value is the number of characters in the first field. If there were a second field, code 31 would appear again after the 11th character code with a numerical representing the size of the next field. This process would continue until all fields were fully presented. Continuing with the example, 11 characters follow. They are coded in the range 31-56 which tells the parser how they are to be interpreted as text characters. Finally code 21 appears again followed by 60. If the parser ~~was~~ were able to calculate the same ~~checksum~~ checksum, a short high pitch beep would indicate a successful scan and the resultant 502 would be put up on the display. Numerical codes are used to represent coding statements from any descriptive language that can build a display by way of browser instructions. The vertical barcode format does not require a specific language for example WAP, JAVA or HTML. Rather the frame software will be built from numeric codes. For example the HTML statement: *<p><table bgcolor="#000000" border=0 cellpadding=5 cellspacing=1 wIDth=468>* could be designated by the numeric code 43. The high-density barcode 60 is based on the premise that a web page can be constructed from a closed list of software statements. By way of the present example, ninety-nine statements could be developed and referenced by a two

digit decimal code. By way of example, any practical number could be used for example 199. Data fields follow other codes as shown in FIG. 3. The parser 104 can build the code statement and populate it with field data extracted from the printed code. At the conclusion of this process HTML or similar software is generated for a browser to generate a frame display.

Please replace paragraph 44 on Page 15 with the following amended paragraph:

44 The secured memory of the present invention, illustrated in FIG. 8, is a memory map 70, the most basic element of any computing device. The memory map 70 is organized into regions where specific tasks are performed. The regions are the physical address locations of a block of memory units 72. A memory unit 72 may be any number of bits but is usually a multiple of eight forming an eight-bit byte, sixteen-bit word, or thirty-two-bit double ~~bit~~ word. A single address location consists of several binary circuits, which must be decoded before the location can be opened for reading or writing. The central processor 11, illustrated in FIG. 1, sends out address signals on the address bus, which is processed by a memory address decoder. The decoder then selects which physical unit of memory is accessed. As shown in FIG. 8, an elementary memory map 70 in which the top of the map, RAM 10, represents an area where a program and data are stored, with logical methods of data transfer to the RAM 10, RAM input 13 and RAM output 12. Programs stored on permanent storage devices are accessed by software in the read only memory basic input/output operating system and put into RAM 10.

Please replace paragraph 47 beginning on Page 16 with the following amended paragraph:

47 FIG. 9 illustrates the use of encrypted RAM 20 in the present invention in a three way verification process. In step 1 a smart card is inserted into the PAL 10 and the pin 30 is accessed. The user is prompted to enter a personal identification number (PIN) 31. The user's

PIN number 31 is verified 32 with the PIN 30 stored in the smart card. In step 2 a secure data hash 33 is compared to a hash 34 stored in smart card or any convenient location. If the comparison 35 is ~~valid both~~ valid, then the process continues to step 3, a verification of a bond created in a previous session. From a previous session, a hash of the secure data in encrypted RAM was created and stored in two places. One place is the smart card and other is on the PAL 10. If both step 1 and step 2 are valid then the decision branch at step 4 is yes and encrypted RAM is unlocked and made available. The user then performs one or more transactions, which may or may not change the data in encrypted RAM. Then a hash-creating algorithm located in ROM BIOS 25, see FIG. 8, runs and creates a new hash for the next session stored on the smart card data hash 34 and on the PAL 10 for the next session. If steps 1 & 2 are not ~~validated~~ valid, then the data in encrypted RAM is destroyed.

Please replace paragraph 49 on Page 17 with the following amended paragraph:

49 Alternative applications of encrypted RAM could also have significance in non-mobile computers. For example a desktop computer can use encrypted RAM to securely store sensitive E-mail or other data. Many users leave the desktop computer on continuously. The common practice is to lock the keyboard and display with a password. If a thief can steal a password then entry could be made on a desktop. Encrypted RAM could then protect sensitive information. Now that several examples have shown how encrypted RAM could be used, following is a detailed explanation of how a special cipher locked address decoder could be made.

Please replace paragraph 50 beginning on Page 17 with the following amended paragraph:

50 FIG. 11 is an alternative embodiment of encrypted RAM. A signal 49 starts and stops the encryption process. A portion of the RAM map 20, as shown in FIG. 8, is set aside for

secure memory. A special address decoder 55 and an address ~~tracked~~ tracker 56 ~~generates~~ generate the memory select lines using one of several possible mathematical formulae. This formula requires a random number be generated at the first time secure data is created then stored in address decoder 55. The random number encode or cipher key 52 is added to the address to create an offset address from the correct location. The contents of a memory location are not encrypted but its address is intentionally misaligned by a random number incorporated into the address decoder. This random number is used whenever this secure address range is accessed in secure mode. Note that this technique applies to static RAM, Dynamic Ram and Flash RAM where an address decoder is required to generate select lines. For the purpose of this example shown in FIG. 11, a RAM segment 54 is address encrypted. To keep the following example simple the memory RAM segment 54 will be limited to 1024 bytes (hex B000-B3FF) of memory but any size is possible and larger is better.

Please replace paragraph 57 beginning on Page 22 with the following amended paragraph:

57 Referring to FIG. 12 of the drawings, when a ~~purchser~~ purchaser (customer) first approaches the merchant's facility at the main doorway area 150, the PAL 10 encounters one of several RF barker beacons 142, which extend past the main doorway area 150 on either side. The barker beacon 142 advertises its presence by transmitting the next available full duplex RF channel, as illustrated in FIGS. 13A and 13B. An ~~igress~~ ingress barker channel 210A, illustrated in FIG. 13A, is used to greet the PAL 10 when it enters the facility, and an egress barker channel 210B, illustrated in FIG. 13B, is used to clear the PAL 10 from the facility. Each beacon 142 can manage a list of channels, 210A. Larger busy doorways will have more barker beacons 142 than smaller less busy doorways. Each PAL 10 will constantly monitor the beacon channels. Each PAL 10 coming into the facility will enter with a variable logic condition "OUT_RETAIL_SPACE" set to true in order to effect which beacon 142 PAL 10 listens for.

When the PAL 10 has successfully entered the main doorway area 150, the logic condition "IN_RETAIL_SPACE" will be set to true. Only one of the conditions may be true at a time. On coming in the main doorway area 150, PAL 10 monitors each ~~igress~~ ingress barker channel 210A for the next available channel. When an ~~igress~~ ingress barker channel is read, the PAL 10 will monitor the energy. If no energy is present it will begin actuation of a short-term time random counter from 0 to 10 milliseconds. If the counter timer expires and there is still no energy present in the channel then PAL 10 begins to transmit its shopping list with other pertinent data to the merchants-in-store computer system 66, see FIG. 7. If during the short-term counter period the PAL 10 detects the presence of energy then it switches to the next highest free channel or moves onto the next barker beacon 142. The bandwidth associated with the barker beacons is separated into a band for customers coming in and a smaller separate band for the customers leaving. There is sufficient frequency diversity so those entering will not interfere with those leaving. Likewise the full duplex channels, 210A, 210B are sufficiently separated so each PAL 10 entering the facility is afforded a high speed channel fast enough to upload a shopping list file in the time it takes to traverse the main doorway area 150.

Please replace paragraph 64 beginning on Page 26 with the following amended paragraph:

64 Still referring to FIG. 12, as the PAL 10 leaves the doorway area 150, out of range of the barker beacon 142, and enters the facility, the channel 210A is freed up and returns back to the available state. The PAL 10 is assigned a full duplex VHF channel for omni directional general communication in the merchant facility (retail) area 152. The VHF band is chosen in this example for its ability to work with an indirect line of sight. Other PALs 10 may share the channels. This link is designed for short data burst traffic and infrequent digital voice traffic. The main characteristic of this link is the need for indirect line of sight communications when the PAL 10 is not in contact with the aisle shelf area 154. Location data, "retail" space map segments and

infrequent voice paging ~~is~~ are carried on this link. Antennas (not shown) in the merchant facility area 152 are positioned strategically within a store. These antennas are designed to communicate in the full range of space with voice and pager communications. The merchant computer 66, see FIG. 7, will periodically "ping" each PAL 10 in its list of "IN_RETAIL_SPACE" set true to see if the PAL 10 is still within the facility. Each PAL 10 will respond with its temporary ID value. If no reply is received within a predetermined time out period, the PAL 10 is assumed to have left the space.

Please replace paragraph 68 beginning on Page 28 with the following amended paragraph:

68 When the purchaser (customer) selects a product from the shelf, and scans the product barcode or unique identification symbol before placing it into the cart, each price unit quantity is scanned in. The price for that product was downloaded when the PAL 10 is in the main doorway area 150 or the aisle shelf area 154. If the purchaser sets a budget maximum then, the PAL 10 will signal the purchaser ~~with~~ when the limit is reached. If the price was not available or is incorrect, the purchaser can enter the price through a touch screen. Differences are reconciled at checkout. Prices are totaled as items are added. Items can be added or removed from the list at any point prior to checkout. When the purchaser scans in each item to be purchased, the PAL 10 matches it against the shopping list. If an item is not scanned in, the PAL 10 will notify the purchaser of forgotten items. Items will not be forgotten until the purchaser discards the item prior to checkout. When a customer removes an item from the shelf and scans in the unique product ID that number is registered in the PAL 10. The PAL 10 will broadcast ~~this information~~ to the appropriate station the ID of the item selected.